WHAT IS CLAIMED IS:

1. A GaN-based semiconductor light emitting diode comprising:

a substrate on which a GaN-based semiconductor material is grown;

a lower clad layer formed on the substrate, and made of a first conductive GaN semiconductor material;

an active layer formed on a designated portion of the lower clad layer, and made of an undoped GaN semiconductor material;

an upper clad layer formed on the active layer, and made of a second conductive GaN semiconductor material; and

an alloy layer formed on the upper clad layer, and made of a hydrogen-storing alloy.

2. The GaN-based semiconductor light emitting diode as set forth in claim 1,

wherein the alloy layer is made of one hydrogen-storing alloy selected from the group consisting of Mn-based hydrogen-storing alloys, La-based hydrogen-storing alloys, Ni-based hydrogen-storing alloys and Mg-based hydrogen-storing alloys.

3. The GaN-based semiconductor light emitting diode as set forth in claim 2,

wherein the Mn-based hydrogen-storing alloy is MnNiFe or

MnNi.

4. The GaN-based semiconductor light emitting diode as set forth in claim 2,

wherein the La-based hydrogen-storing alloy is $LaNi_5$.

5. The GaN-based semiconductor light emitting diode as set forth in claim 2,

wherein the Ni-based hydrogen-storing alloy is ZnNi or MgNi.

6. The GaN-based semiconductor light emitting diode as set forth in claim 2,

wherein the Mg-based hydrogen-storing alloy is ZnMg.

7. The GaN-based semiconductor light emitting diode as set forth in claim 1,

wherein the alloy layer has a thickness of 10Å to 100Å.

8. The GaN-based semiconductor light emitting diode as set forth in claim 1, further comprising:

a first metal layer formed on the alloy layer, and made of one metal selected from the group consisting of Au, Pt, Ir and Ta.

9. The GaN-based semiconductor light emitting diode as set

forth in claim 8,

wherein the first metal layer has a thickness of 100Å or less.

10. The GaN-based semiconductor light emitting diode as set forth in claim 8,

wherein the first metal layer has a thickness the same as or larger than that of the alloy layer.

11. The GaN-based semiconductor light emitting diode as set forth in claim 1, further comprising:

a second metal layer formed on the alloy layer, and made of one metal selected from the group consisting of Rh, Al and Ag.

12. The GaN-based semiconductor light emitting diode as set forth in claim 11,

wherein the second metal layer has a thickness of 500Å to 10,000Å.

13. A method for manufacturing a GaN-based semiconductor light emitting diode comprising the steps of:

(a) preparing a substrate on which a GaN-based semiconductor material is grown;

(b) forming a lower clad layer, made of a first conductive GaN semiconductor material, on the substrate;

(c) forming an active layer, made of an undoped GaN semiconductor material, on the lower clad layer;

(d) forming an upper clad layer, made of a second conductive GaN semiconductor material, on the active layer;

(e) removing designated portions of the upper clad layer and the active layer so as to expose a portion of the lower clad layer; and

(f) forming an alloy layer made of a hydrogen-storing alloy on the upper clad layer.

14. The method as set forth in claim 13,

wherein the step (f) is a step of forming the alloy layer made of one hydrogen-storing alloy selected from the group consisting of Mn-based hydrogen-storing alloys, La-based hydrogen-storing alloys, Ni-based hydrogen-storing alloys and Mg-based hydrogen-storing alloys.

15. The method as set forth in claim 14,

wherein the Mn-based hydrogen-storing alloy is MnNiFe or MnNi.

16. The method as set forth in claim 14,

wherein the La-based hydrogen-storing alloy is $LaNi_5$.

17. The method as set forth in claim 14,

wherein the Ni-based hydrogen-storing alloy is ZnNi or

MgNi.

18. The method as set forth in claim 14,
wherein the Mg-based hydrogen-storing alloy is ZnMg.

19. The method as set forth in claim 13,
wherein the step (f) is a step of forming the alloy layer having a thickness of 10Å to 100Å.

20. The method as set forth in claim 13,
wherein the step (f) is a step of growing the alloy layer on the upper clad layer by physical vapor evaporation method.

21. The method as set forth in claim 13, further comprising the step of:
(g) allowing the surface of the upper clad layer to undergo UV treatment, plasma treatment or thermal treatment at a temperature of 400℃ or less.

22. The method as set forth in claim 13, further comprising the step of:
(h) forming a first metal layer, made of one metal selected from the group consisting of Au, Pt, Ir and Ta, on the alloy layer.

23. The method as set forth in claim 22,

wherein the step (h) is a step of forming the first metal layer having a thickness of 100Å or less on the alloy layer.

24. The method as set forth in claim 22,

wherein the step (h) is a step of growing the first metal layer on the alloy layer by physical vapor evaporation method.

25. The method as set forth in claim 22,

wherein the step (h) is a step of forming the first metal layer having a thickness the same as or larger than that of the alloy layer.

26. The method as set forth in claim 22, further comprising the step of:

(i) thermally treating the alloy layer and the first metal layer.

27. The method as set forth in claim 26,

wherein the step (i) is a step of thermally treating the alloy layer and the first metal layer at a temperature of 200℃ or more for 10 seconds or more.

28. The method as set forth in claim 13, further comprising the step of:

(h') forming a second metal layer, made of one metal selected from the group consisting of Rh, Al and Ag, on the

alloy layer.

29. The method as set forth in claim 28, wherein the step (h') is a step of forming the second metal layer having a thickness of 500Å to 10,000Å on the alloy layer.

30. The method as set forth in claim 28, wherein the step (h') is a step of growing the second metal layer on the alloy layer by physical vapor evaporation method.

31. The method as set forth in claim 28, further comprising the step of:

(i') thermally treating the alloy layer and the second metal layer.

32. The method as set forth in claim 31, wherein the step (i') is a step of thermally treating the alloy layer and the second metal layer at a temperature of 200℃ or more for 10 seconds or more.